



**Department of Chemistry**  
**Indian Institute of Space Science and Technology**  
Thiruvananthapuram, Kerala 695 547, INDIA

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**Dr. JOBIN CYRIAC**  
**Associate Professor**  
Chemistry

### **To whomsoever, it may concern**

I highly recommend Alex Shaji as a candidate for the PhD programme. I had guided him in the course of his time as a Research Intern in the Indian Institute of Science and Technology (IIST) during the summer; 2018 (May-Jul) and winter; 2019 (Nov-Dec) when he worked on 'Low Energy Cluster Beam Deposition.

I assigned him to work on the mass spectrometry and SIMION simulation. Initially, I asked him to formulate how to approach this project. The project was to simulate a cluster deposition system using SIMION. The subject was entirely new to him, but after a week of reading and preliminary work, he had an excellent understanding of the concepts, theories and experiments. He made highly appreciable progress in a short time. He has designed various ion optics, focusing plates and achieved deposition of metal clusters (e.g.,  $\text{Au}_n^+$ ) at a low energy range without destroying the cluster species. A commendable contribution was removing neutral species by putting 90-degree deflection electrodes. The level of effort was significant, and that made the project reach beyond my expectations. He put extra time as necessary to finish the expected result in a stipulated time.

In his days as a research intern, he actively communicated and discussed with the group members who specialised in different disciplines. One of the qualities that make him a good researcher is that he is a self-learner and knows how to clarify his doubts and advance in his research immediately. With the help of his co-guide, he worked on the and ended up producing good results with the depth of understanding he demonstrated. He possesses an incredible work ethic and constantly attempts to improve himself.

He joined my group with the sole purpose of getting exposure to all disciplines of science to explore structural-functional relationships between these fields. By the end of his term in this institute, I was certain that he was well-equipped to chase his dreams to be an international interdisciplinary researcher. His passion, work ethic, communication skills,



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and original ideas make him ideal for any research program. Since our group is committed to understanding and advancing the fundamental knowledge rooted in Chemistry, Physics, Material Science and Engineering, I managed to provide him with an environment that would help him blend into a research group working on such fields.

Please note that the students who get admitted to IISERs in India are in the top 10% of students all over India. This shows the level of his intellect.

He seemed to work well with the other student, and I found him very friendly. Alex has an exemplary character and has very pleasant manners. If any further information is needed, please do not hesitate to contact me.

(Jobin Cyriac)  
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